

IN THE CLAIMS

Claim 1 (original). A process for preparing a polyacrylate having an at least bimodal molecular weight distribution, characterized in that a monomer mixture which comprises

a1) acrylic acid and/or acrylic esters of the formula $\text{CH}_2=\text{C}(\text{R}')(\text{COOR}^2)$, where $\text{R}' = \text{H}$ or CH_3 and R^2 is an alkyl chain having 1 to 20 carbon atoms, at 70%-100% by weight, based on the polymer,

a2) olefinically unsaturated monomers containing functional groups, at 0-30% by weight, based on the polymer,

is polymerized in an at least two-phase free-radical polymerization to give a polyacrylate having a broad, at least bimodal molecular weight distribution, polymerization taking place in a first phase of the at least two-phase polymerization, by means of a low initiator concentration relative to the monomer, to give a first polymer having a molecular weight which is high on average, and, before the monomer mixture has been completely consumed by reaction, a next phase of polymerization is started, by the addition at least once of a regulator, and in this further phase or further phases a further polymer is synthesized having a molecular weight which is relatively low on average.

Claim 2 (**currently amended**). The process of claim 1, ~~characterized in that~~ **wherein** the at least two-phase free-radical polymerization is taken to a total conversion of all phases of greater than 97%.

Claim 3 (**currently amended**). The process of claim 1 ~~or 2, characterized in that~~ **wherein** the polymerization is carried out in two phases and a bimodal molecular weight distribution is built up, the molecular weight maxima in the molecular weight distributions of the two polymers being ~~preferably~~ at least 50 000 g/mol apart.

Claim 4 (**currently amended**). The process of ~~any one of claims 1 to 3,~~
~~characterized in that~~ claim 1, wherein the polydispersity of the polymers is
greater than 6.

Claim 5 (**currently amended**). The process of ~~any one of claims 1 to 4,~~
~~characterized in that~~ claim 1, wherein the molar ratio of monomer mixture to
initiator is less than 0.005, ~~preferably less than 0.003.~~

Claim 6 (**currently amended**). The process of ~~any one of claims 1 to 5,~~
~~characterized in that~~ claim 1, wherein the addition of initiator takes place in
two or more steps.

Claim 7 (**currently amended**). The process of ~~any one of claims 1 to 6,~~
~~characterized in that~~ claim 1, wherein said at least one regulator is selected
from the group consisting of alcohols, ethers, dithioethers, dithiocarbonates,
trithiocarbonates, nitroxides, alkyl bromides, thiols, TEMPO ~~or~~ and TEMPO
derivatives ~~are used as regulators.~~

Claim 8 (**currently amended**). The process of ~~any one of claims 1 to 7,~~
~~characterized in that~~ claim 1, wherein the regulator is added no earlier than
after one hour's polymerization time but no later than two hours before the end of
polymerization.

Claim 9 (**currently amended**). A polyacrylate as ~~obtainable~~ obtained by the
process of claim 1, according to any one of claims 1 to 8, characterized in
that it comprises comprising the following monomer units:

- a1) acrylic acid and/or acrylic esters of the formula $\text{CH}_2=\text{C}(\text{R}')(\text{COOR}^2)$,
where $\text{R}' = \text{H}$ or CH_3 and R^2 is a linear, branched or cyclic alkyl chain having 1 to
20 carbon atoms,
at 70%-100% by weight, based on the polymer,
- a2) olefinically unsaturated monomers containing functional groups,

at 0-30% by weight, based on the polymer,
and ~~in that it has~~ having a broad, at least bimodal molecular weight distribution,
the molecular weight maxima in the molecular weight distributions of at least two
polymers being ~~preferably~~ at least 50 000 g/mol apart.

Claim 10 (currently amended). The polyacrylate of claim 9, ~~characterized in that~~
wherein the olefinically unsaturated monomers containing functional groups are
selected from the ~~following group consisting of vinyl compounds containing~~
~~functional groups~~: maleic anhydride, vinyl acetate, acrylamides, and double-
bond-functionalized photoinitiators containing functional groups.

Claim 11 (currently amended). The polyacrylate of claim 9 ~~or 10, characterized in~~
~~that it further comprises~~ further comprising crosslinkers, photoinitiators,
resins ~~customary for polyacrylates~~, plasticizers, fillers, expandants,
compounding agents and/or aging inhibitors.

Claim 12 (currently amended).. ~~The use of the polyacrylate of any one of the~~
~~preceding claims as a~~ A pressure-sensitive adhesive comprising the
polyacrylate of claim 9.

Claim 13 (currently amended). ~~The use of claim 12 for an~~ An adhesive tape
comprising the pressure-sensitive adhesive of claim 12, the acrylate
~~pressure-sensitive adhesive being present as a single-sided or double-~~
~~sided film on a~~ on one or both sides of a carrier film.